small cavities which rather increase in size towards the surface of each gland.

Anal Glands.

There are constantly two anal glands, one on each side of the anus, in all Æluroids. The glandular structure may be a transverse band of follicles extending between the two anal glands, as in (at least some) *Herpestes*, *Crocuta*, and *Proteles*. The anal glands may be augmented to three pairs, as in *Hyæna brunnea*[1], or even to five pairs, as in *Crossarchus*. These glands, together with the anus, may open into a deep anal pouch, as in the *Hyænidæ*, *Crossarchus*, *Suricata*, and *Cryptoprocta*; or the anus may open on the surface of the body, as in the *Felidæ* and almost all, if not all, the *Viverrinæ*.

2. On some *Laridæ* from the Coasts of Peru and Chili, collected by Capt. Albert H. Markham, R.N., with Remarks on the Geographical Distribution of the Group in the Pacific. By Howard Saunders, F.L.S., F.Z.S.

[Received May 16, 1882.]

(Plate XXXIV.)

Capt. A. H. Markham, already well known for his circumpolar explorations, has availed himself of the opportunities afforded by his appointment to the command of H.M.S. 'Triumph,' on the South-Pacific station, and has sent home from there an interesting collection of birds. The specimens belonging to the *Procellariidæ* have been placed in the hands of Mr. Osbert Salvin, who has made that family his special study; and the present paper is limited to the *Laridæ*, of which the collection contains examples referable to 15 species. Amongst these is a specimen of that rarest of Gulls, and one of the rarest of all birds, *Xema furcatum* (the large forked-tailed congener of the circumpolar *Xema sabinii*), a species of which only two examples were previously known, and the rediscovery of which, after forty years' fruitless search, is due to the energy of Captain Markham.

The following *Laridæ* were obtained between Payta, in 5° 11′, and Coquimbo, in 30° S. lat. In addition to the original name of each genus and species, only those references are given which bear upon geographical distribution in the Neotropical Region.

Nænia inca (Lesson).

Sterna inca, Lesson, Voy. 'Coquille,' ii. p. 731, Atlas, pl. 47 (1826).

Nænia inca, Boie, Isis, 1849, p. 189; Scl. & Salv. P. Z. S. 1871, p. 567; Saunders, *op. cit.* 1876, p. 667.

[No. 28 (♂ adult), no. 29 (♂ immature), Callao Bay, August 1881.]

In the latter the general hue of the upper parts is of a smoke-

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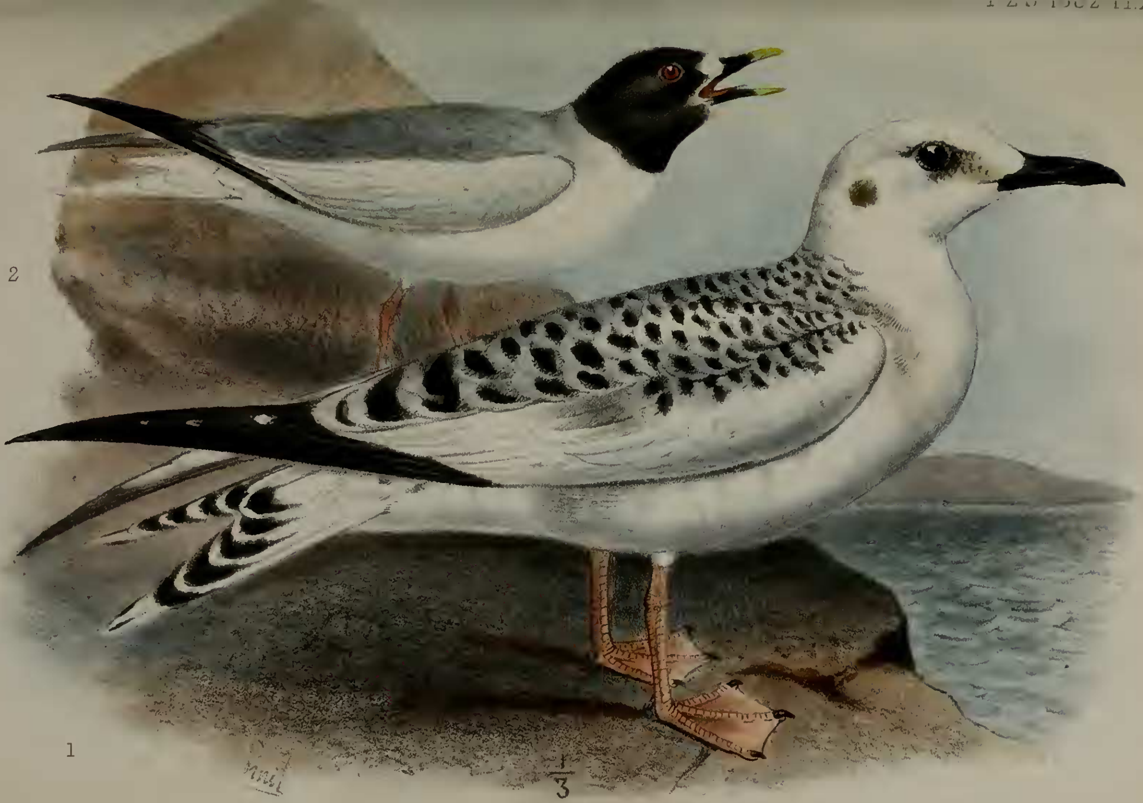
[1] Trans. Zool. Soc. vol. vii. p. 506.



J. Smith lith

Hanhart imp

XEMA FURCATUM. 1 Young 2. Adult

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grey, much lighter than in the adult, and the moustache-like plumes beneath the eye merely show traces of the white colour which is subsequently assumed. The breeding-haunts of this bird are still unknown; they are surmised to be on the island of San Lorenzo, in Callao Bay, and in similar situations along the coast, but nothing has yet been positively ascertained.

STERNA MAXIMA, Bodd.

Sterna maxima, Bodd. Tab. Pl. Enl. p. 58, no. 988 (1783); Scl. & Salv. P. Z. S. 1871, p. 567; Saund. *op. cit.* 1876, p. 655.

[No. 78 (♂), no. 79 (♀), Payta, January 1882. Eyes black.]

Nearly adult, but the secondaries still show some of the dark markings indicative of immaturity, and only the crown and nape are as yet streaked with black; the bill is orange-yellow. In the adult, in breeding-plumage, the entire crown from the base of the bill is deep glossy black—a characteristic which distinguishes it from *Sterna bergii* of the African and Indian seas, in which a broad fillet of white intervenes between the black forehead and the base of the bill. These two species were long confounded; and as *S. maxima*, which is properly an American species, reaches across to the west coast of Africa, and even as far north as the Straits of Gibraltar, it may not be superfluous to point out this distinction. *S. maxima* has also a lighter mantle than *S. bergii*; but impinging upon the range of the latter comes a large light-mantled Tern, *S. bernsteini*, found between the island of Rodriguez and the island of Halmahera. This last very rare species, in its winter plumage, much resembles *S. maxima*; the breeding-plumage is as yet unknown, so that it is at present impossible to say if the black crown extends to the base of the bill or is terminated by a white band.

STERNA ELEGANS, Gamb.

Sterna elegans, Gamb. Pr. Phil. Ac. iv. p. 129 (1848); Saund. P. Z. S. 1876, p. 653.

[No. 32, Callao Bay, Sept. 1881; nos. 33 & 34, Coquimbo Bay, Nov. 1881. Eyes dark brown.]

Adult, but not old, birds, in winter plumage, in which only the nape and crown are black. The Callao example is slightly smaller than the two others; but this is the only difference.

It was with diffidence that I separated its Atlantic representative from this species, under the name of *S. eurygnatha* (P. Z. S. 1876, p. 654); but the subsequent examination of a more extensive series has hitherto confirmed the views then entertained as regards their specific distinctness, mainly based upon the relative position of the mandibular angle.

The breeding-resorts of *S. elegans* are as yet unrecorded, nor have I hitherto succeeded in examining an adult in nuptial dress. It is known to frequent the coast as far north as California, and will probably be found breeding along the Pacific shores of Mexico; nevertheless Mr. Forrer, who found *S. maxima* abundant in Lower California, did not obtain *S. elegans*.

STERNA HIRUNDINACEA, Less.

Sterna hirundinacea, Lesson, Tr. d'Orn. p. 621 (1831); Saund. P. Z. S. 1876, p. 647.

Sterna cassinii, Scl. P. Z. S. 1860, p. 391; Scl. & Salv. *op. cit.* 1871, p. 570.

[No. 30 (juv.), no. 31 (adult), Callao Bay, August 1881; nos. 35 & 36 (juv.), Coquimbo Bay, Nov. 1881. Eyes dark brown.]

One adult, and three birds of the year in progressive stages of winter plumage. Callao, in 12° S. lat., is a considerable advance of range over that of Coquimbo in 30° S., the furthest previously recorded (Cunningham, 'Ibis,' 1870, p. 500). The head-quarters of this southern species are on the coasts and islands of the Chilian archipelago, the Straits of Magellan, Patagonia, and the Falkland Islands; but on the Atlantic side of the continent its range northwards is not known to extend beyond Rio de Janeiro, in 23° S. lat.

STERNA EXILIS, Tsch.

Sterna exilis, Tschudi, F. Per. Aves, p. 306 (1846); Scl. & Salv. P. Z. S. 1871, p. 572; Saund. *op. cit.* 1876, p. 663.

[Nos. 37 & 38, Paracas Bay, Peru, October, 1881. Eyes brown.]

I have now examined five, and possess three specimens of this very distinct, although little-known member of the *Sternula* subdivision.

It is a purely South-Pacific species, which may be briefly described as a long-winged *S. minuta*, washed all over with shades of smoke-grey, and with more black on the bill. Its immature plumage and its breeding-places are still unknown.

RHYNCHOPS MELANURA, Sw.

Rhynchops melanura, Swainson, An. in Menag. p. 340 (1838).

[No. 66 (♀), Coquimbo Bay, November 1881. Eyes brown.] Adult.

In their excellent treatise on the Neotropical Laridæ (P. Z. S. 1871, p. 566) Messrs. Sclater and Salvin deemed it advisable to unite under the specific name of *R. nigra* both the northern white-tailed form and the southern black-tailed one. This caution was mainly due to the fact that, amongst Mr. Salvin's white-tailed specimens obtained during winter in Central America, one example shows some dark markings in the middle of the lateral rectrices, thus intergrading with the southern dark-tailed bird. Recent examination of this specimen and the others in Mr. Salvin's extensive series, besides my own, leads me to the conclusion that the two forms are entitled to specific distinction, for the following reasons:—In the northern adult the upperside of the rectrices is almost entirely white, with only a little dusky colour in the central ones, the underside being pure white; the under wing-coverts are white; the secondaries are to a great extent white, and the upper primaries show a considerable margination of that colour. In the southern form, on the other hand, the rectrices on both their upper and under sides are dark smoke-colour, with merely a thin outside margin of a lighter tint; the under wing-coverts are dusky; the tips of the secondaries show far less white than in the northern bird; whilst the upper primaries can hardly be said to show any trace of lighter colour even in this Coquimbo specimen, which is a fully adult and a freshly-moulted example. The distinctions admittedly rest upon the respective preponderances of light and dark; and in the immature northern bird, such as I consider the Central-American example to which reference has been made, the tail is not so white as in the adult; nevertheless the two forms can be separated *at a glance at any age.* It is substantially correct to define the northern *R. nigra* as a white-tailed, and the southern *R. melanura* as a black-tailed bird. In the winter plumage both species show a more or less defined white collar.

There is a break in the chain of evidence respecting the intertropical range of these two species. Through the kindness of my friend Mr. E. Hargitt, I have specimens of the southern form, *R. melanura,* from as far north as Berbice, British Guiana, about lat. 6° N.; and it probably ascends the Orinoco, and passes along the coast of Venezuela. In this case the northern range of *R. melanura* in the Atlantic would come very close to the territory of the northern *R. nigra,* which is common in Florida, whence I possess examples. Under these circumstances the wonder is that the distinctions between the northern and southern forms should be so marked as they are.

XEMA FURCATUM (Neboux). (Plate XXXIV.)

Larus furcatus, Neboux, Voy. 'Vénus,' Atlas, pl. x. (1846), descr. Rev. Zool. 1840, p. 290.

Creagrus furcatus, Bp. Naum. 1854, p. 213; Salvin, Tr. Z. S. ix. p. 506.

Xema furcatum (Neboux), Saunders, P. Z. S. 1878, p. 210.

[No. 9, Paracas Bay, Peru, Oct. 1881. Eyes brown.]

The third known example of this rarest of Gulls, the history of which may here be briefly recapitulated. The Paris Museum possesses one, in somewhat immature plumage, said to have been obtained by Dr. Neboux, of the French frigate 'Vénus,' at Monterey, California, in the month of November. The British Museum has an adult in full breeding-plumage, obtained during the voyage of H.M.SS. 'Herald' and 'Pandora,' at Dalrymple rock, Chatham Island, Galapagos group, nearly on the equator, between the 11th and 16th January. It is a medium-sized Gull, with long wings (16 inches), a dark slate-coloured hood, and a forked tail; indeed were it not that the hood is separated from the base of the hill by a band of white feathers, and that there is no black neck-ring at the base of the hood, *Xema furcatum* might be described as a gigantic Sabine's Gull. In the young, now figured, the resemblance to the young of *Xema sabinii* is very marked. The entire head is white, with dark markings in front of and surrounding the eyes, and a brown auricular patch as in most of the immature hooded Gulls; neck and mantle ashy brown, the tips of the feathers margined with white; upper wing-coverts and secondaries white; primaries, 1–5 black with greater part of inner web white, 6 and 7 white barred with dusky, 8–10 pure white. Tail much forked, the outer feathers nearly white, the others banded with brown and tipped with white; rump white slightly mottled with brown. Underparts white. Bill horn-black; tarsi and feet livid brown. The bill is proportionately longer, slenderer, and more curved than in *X. sabinii*, from which it also differs in having a considerable bare space between the base of the feathers and the nares. The first primary which shows the slightest tip of white is the 5th, and there is less white at the tips of the upper ones than in the young of *X. sabinii*.

The feathers are all quite fresh, and, reasoning from analogy, I should think that this example cannot have been more than three or four months old. Where, then, are the head-quarters of this mysterious Gull? It would seem by this specimen that its breeding-time corresponds to that of the northern hemisphere, and that, like some other Gulls, it passes southwards to escape the northern winter; but as yet nothing is known. It is, however, somewhat remarkable that American naturalists who have devoted so much attention to the exploration of the coast of the Pacific, from Vancouver's Island down to Mexico, have discovered no trace of it; nor have repeated visits to the Galapagos produced more than the isolated adult specimen above noticed. Capt. Markham's valuable acquisition has now made us acquainted with the first plumage of this extremely rare bird; and the proof of the existence of this long-lost species may be expected to awaken an interest which will probably in a few years lead to the discovery of its real habitat.

XEMA SABINII (Sabine).

Larus sabini, J. Sabine, Tr. Linn. Soc. xii. p. 520 (1818).

Xema sabinii (Sabine), Saunders, P. Z. S. 1878, p. 209.

[Nos. 70 & 71 (♂ ♀), Callao Bay, Dec. 1881. Eyes black.]

Two specimens of this circumpolar species in the winter plumage of the second year: *i. e.* adult, but without the hood. In the primaries the white bottoms of the tips are so completely worn away as to give them the appearance of having been cut off squarely, showing that these flight-feathers are not renewed until January or February, as in the case of many of the Terns.

The occurrence of this species at Callao, in 12° S., further increases our knowledge of its winter range on the Peruvian coast, the most southern locality hitherto recorded being Tumbez in about 8° S. (Scl. & Salv. P. Z. S. 1878, p. 141), on the authority of Prof. Steere. On the Atlantic side this species has not yet been recorded as an autumn and winter visitant beyond the coast of France and the Bermudas.

LARUS FRANKLINI, Sw. & Rich.

Larus franklini, Sw. & Rich. F. Bor.-Am., Birds, p. 424 (1831); Scl. & Salv. P. Z. S. 1861, p. 577; Saund. *op. cit.* 1878, p. 195

[No. 11, no. 12 (♀), no. 13 (♂), no. 14 (♀), Coquimbo Bay, Nov. 1881. Eyes brown. No. 77, Payta, January 1882. Eyes black.]

This rather small Gull, with a dark slate-black hood in the nuptial dress, is now well known as a winter visitant to the Pacific coast as far south as Chili. Its breeding-grounds are in Manitoba and other northern portions of America, chiefly to the west of 90° W. long., or say, roughly, the prolongation of the line of the Mississippi.

LARUS SERRANUS, Tsch.

Larus serranus, Tschudi, Wiegm. Arch. 1844, pt. i. p. 314; Scl. & Salv. P. Z. S. 1871, p. 577; Saund. *op. cit.* 1878, p. 196.

[No. 10, Callao Bay, August 1881.]

A fine adult of this much larger species, with the full black hood of breeding-plumage. It is known to breed on the islands and shores of the Andean lakes; but its eggs and nestlings are, I believe, still undescribed. During the bad weather in the mountains it comes down to the Pacific coast; but as yet it has not been found on the eastern slope, nor in the Argentine provinces, the bird thus named by Burmeister being clearly *L. maculipennis.*

LARUS CIRRHOCEPHALUS, Vieill.

Larus cirrhocephalus, Vieillot, in 2nd ed. Nouv. Dict. Hist. Nat. t. xxi. p. 502 (1818); Saunders, P. Z. S. 1878, p. 204.

[No. 75 (♂), no. 76 (♀), Payta, January 1882. Eyes bright silvery grey; legs and beak red.]

Both these examples are adults, and even *old* birds, as evidenced by the size of the subapical mirror in the first and second primaries. But although the month of January corresponds to our midsummer, nevertheless these birds show only a little of the pale grey hood characteristic of the nuptial season. In Argentine specimens the hood is assumed from September onwards, and, following the usual rule with Gulls of the southern hemisphere, the birds may be expected to breed about November. Where this Gull breeds, however, is as yet a mystery, as is also the route by which it reaches the Pacific coast. All that is known is that it occurs on the coast, bays, and lakes of Brazil from about Rio de Janeiro down to Buenos Ayres, and up the La Plata and the Paraná; but accounts of its breeding-habits in those districts, such as those of Hudson (P. Z. S. 1870, p. 802, and 1871, p. 4), really apply to a totally different species, namely *L. maculipennis*, Licht. Without any connecting links in the chain of distribution, *L. cirrhocephalus* makes its appearance on the coast of Peru, these two examples making the third and fourth known to me from there, its range on the Pacific side being from the Chincha Islands, in about 13°, to Payta in 5° S. lat.

In this connexion it is necessary to point out an error into which my friend Mr. R. B. Sharpe has fallen, owing to the want of genuine specimens of this Gull in the British Museum, a deficiency which I have since supplied. In his Report on the birds collected by Dr. Coppinger, of H.M.S. 'Alert' (P. Z. S. 1881, p. 16), Mr. Sharpe, under the name of *L. cirrhocephalus*, has included two other and perfectly distinct species. His no. 87 is really *L. glaucodes*, Meyen (as is also his no. 51, which is rightly named), a species with a black or dark brown hood (similar in that respect to our *L. ridibundus*), which ranges from the Falklands to the coast of Chili. On the other hand his nos. 68 and 69 are respectively young and adult of *L. maculipennis*, Licht., another *dark*-hooded Gull, very close to *L. glaucodes*, but from which it is distinguishable by the wing-pattern. Hitherto *L. maculipennis*, which is the common Argentine species, has not been known to occur beyond the Chuput valley, Eastern Patagonia, 43° S.; and this is the first time it has been obtained on the Pacific coast. It was already sufficiently remarkable that two such very closely allied and yet perfectly distinguishable species of Gull as *L. maculipennis* and *L. glaucodes* should be coexistent within so limited an area; but now that their range is shown to intersect, it is stranger than ever. Reverting to *L. cirrhocephalus*, which has been so repeatedly confused with totally distinct species, it may be excusable to repeat that it has a *pale grey* or *lavender hood*, slightly darker on the neck, and that the only species with which it can be confounded is its South-African representative *L. phæocephalus*, Sw.

LARUS BELCHERI, Vigors.

Larus belcheri, Vigors, Zool. Journ. iv. p. 358; Scl. & Salv. P. Z. S. 1871, p. 575; Saund. *op. cit.* 1878, p. 182.

[No. 4, San Lorenzo Island, Callao Bay, August 1881. Eyes brown, legs yellow.

No. 7, Callao Bay, August 1881.

No. 8, Coquimbo Bay, November 1881.]

The first is an adult with pure white head and underparts; the second is in the brown plumage of the first year; the third is a bird of the second year which has already assumed the dark mantle of the adult, but still retains the brown hood and slightly mottled underparts indicative of immaturity.

This stoutly built species is a very remarkable Pacific form, uniting, as it does, all the main features in which the Gulls of the Pacific differ from those of the Atlantic. In the immature stage it has an exceedingly well-marked hood, which it afterwards loses; in the adult stage it still retains a very defined black bar on the rectrices. Altogether it resembles *L. crassirostris* of Japan far more closely than any other; but it is a coarser species, and has a more defined hood in the immature plumage than the Japanese bird.

Larus modestus, a more slender but very characteristic species frequenting the coasts of Peru and Chili, but of the breeding-place of which no authentic accounts have yet appeared, is not represented in this collection. Another and very rare Gull, hardly a dozen examples of which are known to exist, is *Larus fuliginosus*, a dark sooty bird with a hood at all seasons, restricted to the Galapagos group.

Larus dominicanus, Licht.

Larus dominicanus, Licht. Verz. Doubl. p. 82 (1823); Scl. & Salv. P. Z. S. 1871, p. 576; Saund. *op. cit.* 1878, p. 180.

Five specimens in various stages of plumage from Coquimbo and Callao. This widely distributed black-backed Gull appears to replace in the southern hemisphere the northern *L. marinus*.

Stercorarius pomatorhinus (Temm.), Saund. P. Z. S. 1876, p. 324.

♂ ♀, Callao Bay, December 1881.

Two examples of this circumpolar parasitic Gull, apparently in second and third year. These are the first specimens on record from the South Pacific, its previous occurrence in that ocean reaching no further than the latitude of Inosima, Japan (P. Z. S. 1877, p. 800). Callao is also by about three degrees the most southern latitude yet reached, Cape York, North Australia, being the nearest. It is probably a regular visitant to the Peruvian coast, several observers having remarked medium-sized Skuas pursuing the other Gulls, although, until now, the species could not be identified. Unless specimens are actually obtained, it is, however, unsafe to conclude that any species observed pursuing and robbing other sea-birds must necessarily be a Skua of some kind: on the contrary, many other Gulls have similar habits, amongst which may be mentioned *Larus belcheri* and *Larus heermanni* in the Pacific, *Larus atricilla* (see E. Coues, B. N. W. p. 653), *Larus hemprichi* in the Red Sea, and, in all probability, many more.

Stercorarius chilensis (Bonap.), Saund. P. Z. S. 1876, p. 323.

One, Callao Bay. This locality is the most northern yet recorded for this southern representative and close ally of *S. catarrhactes* of the northern hemisphere.

In a paper recently published by M. Alph. Milne-Edwards (Ann. Sc. Nat. (6) xii. art. 7), "Sur la Faune des régions australes," he inclines to the belief that the type from which the large short-tailed Skuas *Stercorarius catarrhactes*, *S. chilensis*, and *S. antarcticus* are derived belonged originally to the antarctic regions. The first is now confined to the northern hemisphere, in which alone all the other known species of Skua have their breeding-places, and the balance of probability would therefore seem to be rather in favour of a northern origin; but, after all, this is mere conjecture. With regard to the other Gulls I will quote his exact words:—"Cette étude montre que les Goëlands et les Mouettes de la région antarctique ne présentent rien que puisse caractériser la faune de cette partie du globe, et que les espèces ou races qui y vivent sont probablement des dérivés des oiseaux du même genre qui abondent dans l'hémisphère nord." It would be unsatisfactory to enter into arguments as to the probability of the short-tailed Skuas having had their origin in the southern, whilst all the other Gulls had their origin in the northern hemisphere; but inasmuch as the *Alcidæ* proper are now generally admitted to be connected with the *Laridæ* on the one side, as the *Laridæ* are connected with the *Limicolæ* on the other, and as the *Alcidæ* are only known to inhabit the *northern* hemisphere, it would appear more probable that the *Laridæ*, or at least the *Larinæ*, had their origin there also. There are, however, some very remarkable points about the Gulls of the southern hemisphere, especially with relation to the Pacific, of which M. Milne-Edwards seems to be unaware, and upon which I should like to offer a few observations.

Throughout the northern hemisphere, exclusive of the shores washed by the Pacific, the Gulls (with the exception of the three arctic genera *Rissa, Pagophila*, and *Rhodostethia*) fall into two well-marked groups—those in which the adults bear a coloured hood during the breeding-season, and those which never have a hood at any time. In all the members of both of these groups the immature birds have a dark band across the rectrices, which disappears as they approach maturity. Several representatives of each of these groups also inhabit the southern hemisphere—*Larus cirrhocephalus* of South America, and its close ally *L. phæocephalus* of South Africa, *L. maculipennis, L. glaucodes*, and *L. serranus* of South America, belonging to the former; *L. dominicanus*, found from New Zealand to South America (by way of the Cape of Good Hope, not through the South Pacific), *L. bulleri, L. scopulinus, L. novæ-hollandiæ*, and *L. hartlaubii*, found at or between New Zealand and the Cape of Good Hope, belonging to the latter group. But it is only in the Pacific (merely including in that area the desolate islands of South Shetland, the Falklands, and a portion of Patagonia near the eastern entrance of the Straits of Magellan) that we find several species of Gulls which agree with the other forms in having a band across the rectrices in the immature stage, but differ from them in many other respects. Most of these species are of a coarse heavy build, and have a tendency to a sooty hue on the underparts; but their principal characteristic is the presence of a more or less defined *hood* in the *immature* stage, which is generally *lost* in the *adult* plumage. *L. scoresbii*, which extends beyond the Pacific to the Falklands, varies least in this respect from the general type of Gulls; it has a well-defined hood in youth, but loses the hood with the disappearance of the bar on the tail, which becomes white. Its range is but little beyond that of the Cape-Horn current. *Larus belcheri*, distributed along the whole coast-line of Chili and Peru washed by Humboldt's current of cold water, has a hood in youth only; but it has a barred tail at all ages, the black predominating over the white. The species most nearly resembling it in the adult plumage is *Larus crassirostris*, of the Pacific coasts of Japan and China, in which, however, the amount of black and white in the rectrices is nearly equal; nor has the young so well-marked a hood; its mantle also is lighter, and its other characteristics are so far modified as to make it intermediate between the Old-World and the South-Pacific Gulls. The line of communication of the ancestor of these forms, which now constitute